

CLAIMS

1. A method of producing a silicon carbide sintered body for heater, which contains 500 ppm or more of nitrogen, comprising:

obtaining slurry-like mixed powder obtained by dispersing silicon carbide powder in a solvent;

obtaining a green body by pouring the mixed powder in a shaping die followed by drying;

first heating step of heating the green body under a vacuum atmosphere to a temperature in the range of 550 to 650°C; and

second heating step of, after further heating to a temperature equal to or higher than 1500°C under a nitrogen gas atmosphere, holding at the temperature under the nitrogen gas atmosphere to obtain a silicon carbide sintered body.

2. The method of producing a silicon carbide sintered body for heater of claim 1, wherein in the second heating step a temperature is raised to 1700 to 2000°C under a nitrogen gas atmosphere.

3. The method of producing a silicon carbide sintered body for heater of claim 2, wherein in the second heating step a holding time at the temperature under a nitrogen gas atmosphere is 0.5 to 8 hr.

4. The method of producing a silicon carbide sintered

body for heater of claim 3, wherein in the second heating step pressure under a nitrogen gas atmosphere is -0.5 to 0.2 kg/m^2 .

5. The method of a producing silicon carbide sintered body for heater of any one of claims 1 to 4, wherein the porosity of a silicon carbide sintered body for heater is 32% by volume or less.

6. The method of producing a silicon carbide sintered body for heater of any one of claims 1 to 5, wherein an amount of nitrogen of a silicon carbide sintered body for heater is 500 to 1200 ppm.

7. The method of producing a silicon carbide sintered body for heater of any one of claims 1 to 6, wherein the resistance of a silicon carbide sintered body for heater at 100°C is 0.02 to $0.06 \Omega \text{ cm}$.

8. The method of producing a silicon carbide sintered body for heater of any one of claims 1 to 7, wherein, with the resistance of a silicon carbide sintered body for heater at 100°C as A and that at 1000°C as B, B/A is 0.2 to 2 .

9. The method of producing a silicon carbide sintered body for heater of any one of claims 1 to 8, wherein a particle diameter of the silicon carbide powder in the step of obtaining the slurry-like mixed powder is 0.01 to $20 \mu\text{m}$.

10. The method of producing a silicon carbide sintered body for heater of any one of claims 1 to 8, wherein a particle diameter of the silicon carbide powder in the step of obtaining the slurry-like mixed powder is 0.05 to 10 μm .

11. The method of producing a silicon carbide sintered body for heater of any one of claims 1 to 8, wherein the silicon carbide sintered body in the step of obtaining the slurry-like mixed powder is one fired under an argon atmosphere.

12. A silicon carbide sintered body for heater, wherein an amount of nitrogen is 500 ppm or more and the porosity is 32% by volume or less.

13. The silicon carbide sintered body for heater of claim 12, wherein the amount of nitrogen is 500 to 1200 ppm.

14. The silicon carbide sintered body for heater of claim 12, wherein the amount of nitrogen is 550 to 900 ppm.

15. The silicon carbide sintered body for heater of any one of claims 12 to 14, wherein the porosity is 5 to 29% by volume.

16. The silicon carbide sintered body for heater of any one of claims 12 to 15, wherein the resistance at 100°C is 0.02 to 0.06 Ω cm.

17. The silicon carbide sintered body for heater of any one of claims 12 to 15, wherein the resistance at 100°C is 0.03 to 0.05 Ω cm.

18. The silicon carbide sintered body for heater of any one of claims 12 to 15, wherein with the resistance of a silicon carbide sintered body for heater at 100°C as A and that at 1000°C as B, B/A is 0.2 to 2.

19. The silicon carbide sintered body for heater of claim 12, which is produced according to a method of producing of any one of claims 1 to 11.